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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Jorg Hoffmann

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EXAMINER

CAZAN, LIVIUS RADU

ART UNIT

PAPER NUMBER

3729

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/500,978	Applicant(s) HOFFMANN ET AL.	
	Examiner LIVIOUS R. CAZAN	Art Unit 3729	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 February 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,5,6,9,10,16 and 17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,5,6,9,10,16 and 17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2/26/2008 has been entered.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. **Claims 1, 5, 6, and 9, 10, 16, and 17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

4. In claim 1, there is no positive step of adhesively bonding the assembly to a base plate. As currently claimed, the adhesive bonding could take place at a later time, not as part of the claimed method, claim 1 merely requiring testing prior to any such bonding. Moreover, in step (i), the phrase "the bonded contact surfaces" lacks proper antecedent basis, since the claim language does not relate step (i) to the adhesive bonding in step (g). Similarly, in claims 10 and 17, the bonded contact surfaces are not currently linked to the recited adhesive bonding. Further, the phrase "the base plate" in step (g) lacks proper antecedent basis. In step (f), the phrase "a rotating component" renders the

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claim indefinite since, as currently claimed, it would appear the shaft is connected to a component while the component is rotating. If the rotor 11 is the intended component, "a rotating component" should be replaced with --the rotor--. Also, "shaft (49)" should be changed to --shaft (35)--. **The claims will therefore be rejected as best understood.**

Claim Rejections - 35 USC § 102

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. **Claims 10, 16, and 17** are rejected under 35 U.S.C. 102(e) as being anticipated by Saichi (US6614139), with Tolerancing ("Tolerancing System") being used as extrinsic evidence.

7. With reference to Fig. 2, Saichi discloses a hydrodynamic bearing arrangement for an electric motor comprising a stator (23), a rotor (30), a shaft (31) and the hydrodynamic bearing arrangement, which rotatably supports the rotor with respect to the stator, the hydrodynamic bearing arrangement having a bearing sleeve (22), an axial ring (33) being mounted onto one end of the shaft (31) and the shaft (31) being inserted into the bearing sleeve (22); the corresponding end of the bearing sleeve (22) being sealed with a counter disk (25); bearing fluid being inserted into the bearing gap (see col. 8, Ins. 19 and 20; col. 7, Ins. 17-26) between the shaft (31) and the bearing sleeve (22), and the bearing-rotor assembly thus formed from the hydrodynamic bearing arrangement and the shaft forming a fully functional unit that can be tested and mounted onto the stator or the rotor. Such an electric motor can be mounted in a hard disk drive (col. 7, Ins. 5-7).

8. The stator or the rotor is firmly fixed to the outer surface of the bearing sleeve (22). The hydrodynamic bearing arrangement is fixedly connected to the rotor or the stator. A groove (col. 6, Ins. 9-19) is provided on at least one of the bonded contact surfaces of either the bearing-rotor assembly or the base plate.

9. The bearing-rotor assembly can be tested before being adhesively bonded to the base plate. Note that although the claims require testing, the actual testing produces no structural differences in the bearing-rotor assembly, and therefore it is deemed Saichi discloses the claimed structure.

10. Saichi discusses press-fitting or shrink-fitting the bearing sleeve within the stator assembly (col. 4, Ins. 61-67). Saichi also discloses using adhesive to fix the bearing sleeve (see col. 7, Ins. 27-34). It would appear from Saichi that both a press fit/shrink fit and adhesive are used, since ln. 38 in col. 4 to ln. 4 in col. 8, appears to be describing the embodiment in Fig. 1. Saichi does not explicitly discuss utilizing a transition fit. It should be noted that depending on the tolerance of the parts to be mated, a transition fit can be indistinguishable structurally from an interference fit (i.e. press-fitting or shrink-fitting), and the method of obtaining the fit is therefore irrelevant. See the 7th and 8th pages of Tolerancing, describing transition fit and showing that depending on the actual dimensions of the parts, the actual fit of two parts can be anywhere between clearance and interference.

Claim Rejections - 35 USC § 103

11. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

12. Claims 10, 16, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saichi in view of Takayanagi (US20020101123), with Tolerancing being used as extrinsic evidence.

13. To the extent Applicant disagrees that Saichi discloses providing a transition fit between the assembly and base plate as well as using an adhesive and providing a groove, as claimed, Takayanagi discloses that it is known to use press-fit adhesion (i.e. both press fitting and adhesive), as well as grooves for the adhesive when connecting a bearing assembly to a base plate. See for example Fig. 10 and para. [0023].

14. Also, as discussed above, a press fit/interference fit can be structurally indistinguishable from a transition fit.

15. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize a press-fit adhesion and grooves as in Takayanagi in the invention of Saichi, since such a method of connecting a bearing assembly to a base plate is an art-recognized equivalent method of securing a bearing assembly to a base plate.

16. Claims 1, 6, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saichi in view of Takayanagi, and Lindsay (US2251142), with Tolerancing used as extrinsic evidence.

17. Saichi discloses the claimed method steps, as discussed above.

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18. However, Saichi does not disclose testing the thus formed assembly before installing it into the spindle motor, nor performing such testing after having connected the shaft to the rotor.

19. It is very well known to test components prior to further processing, in order to reduce manufacturing costs by discarding defective components prior to performing further manufacturing steps. For example, Lindsay teaches testing a bearing assembly prior to assembling it in a wheel, in order to avoid having to later disassemble the entire wheel to remove a defective bearing (page 1, col. 2, lns. 9-30).

20. At the time the invention was made, it would have been obvious to one of ordinary skill in the art to test the bearing assembly prior to mounting it into the stator, in order to avoid wasting manufacturing time and resources. A defective bearing assembly installed in a good disk drive results in a defective drive, which is a waste of time and materials. Further, it would have been obvious to one of ordinary skill in the art to perform such testing either prior to, after, or both prior to and after assembling the shaft to the rotor, in order to eliminate defective components as early as possible during the manufacturing cycle.

21. To the extent Applicant disagrees that Saichi discloses providing a transition fit between the assembly and base plate as well as using an adhesive and providing a groove, as claimed, Takayanagi discloses that it is known to use press-fit adhesion (i.e. both press fitting and adhesive), as well as grooves for the adhesive when connecting a bearing assembly to a base plate. See for example Fig. 10 and para. [0023].

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22. Also as discussed above, and from Tolerancing, it is readily apparent that depending on the particular manufacturing tolerances of the bearing assembly and base plate, a transition fit may be indistinguishable from a press fit (such as in the case of maximum interference discussed by Tolerancing). For the case of maximum interference discussed by Tolerancing (8th page), the assembly would have to be press fitted into the base plate, and a press fit and a transition fit are the same in such a situation. See the *Response to Arguments* below.

23. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize a press-fit adhesion and grooves as in Takayanagi in the invention of Saichi, since such a method of connecting a bearing assembly to a base plate is an art-recognized equivalent method of securing a bearing assembly to a base plate.

24. **Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Saichi, Takayanagi, Lindsay, in view of Hoffmann (US6566776 to Hoffmann et al.).**

25. Saichi, Takayanagi, and Lindsay disclose the same invention as the Applicant, except for the adhesive being an adhesive with low gas emission properties.

26. Hoffmann teaches that in hard disk drives it is disadvantageous to utilize adhesives which give off gasses, since the gasses can deposit on the storage disks. Therefore, Hoffmann teaches utilizing adhesives with low gas emission properties. See col. 1, Ins. 14-24. See col. 2, Ins. 1-17.

27. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize such an adhesive in order to prevent damage to the data storage disks.

Response to Arguments

28. Applicant's arguments filed 2/26/2008 have been fully considered but they are not persuasive.

29. Applicants argue the Examiner has misread and misapplied the teachings of Saichi with respect to the limitation of a groove on the bonded contact surfaces. The Examiner respectfully disagrees. As discussed in the rejection under 35 U.S.C. 112, second paragraph, the recited bonded contact surfaces are not necessarily related to any surfaces adhesively bonded. The claims do not specify to what these contact surfaces are bonded and in what manner. It is therefore deemed Saichi discloses the as currently claimed groove.

30. Regarding Applicant's arguments concerning the transition fit, they are deemed moot in view of the new grounds of rejection. However, it is noted that currently the claims do not set forth any particular relationships that distinguish what is meant by a transition fit. For example, the claims could explicitly exclude cases in which irrespective of the tolerance of the parts an interference fit is present, or could in some other way distinguish the case of maximum interference in a transition fit from a case of interference in a press fit.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LIVIUS R. CAZAN whose telephone number is (571)272-8032. The examiner can normally be reached on M-T 6:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Vo can be reached on (571)272-4690. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/A. Dexter Tugbang/
Primary Examiner, Art Unit 3729

/L. R. C./ 8/4/2008
Examiner, Art Unit 3729